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ABONN
PATENT
Attorney Docket No. 2356.0074

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
Agnes LABIGNE et al.) Group Art Unit: 1645
Serial No.: 08/211,312)
Filed: July 1, 1994)
For: GENES OF HELICOBACTER PYLORI) Batch No.: K86
NECESSARY FOR THE REGULATION)
AND MATURATION OF UREASE AND)
THEIR USE (AS AMENDED))

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

SUBMISSION OF FORMAL DRAWINGS

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Subject to the approval of the Examiner, please replace the informal drawings with the formal drawings Fig. 1 - 13 (20 sheets) filed herewith. If the formal drawings for any reason are not in full compliance with the pertinent statutes and regulations, please so advise the undersigned. If any fees are necessary for the submission of these formal drawings, please charge our Deposit Account No. 06-0916.

Respectfully submitted,

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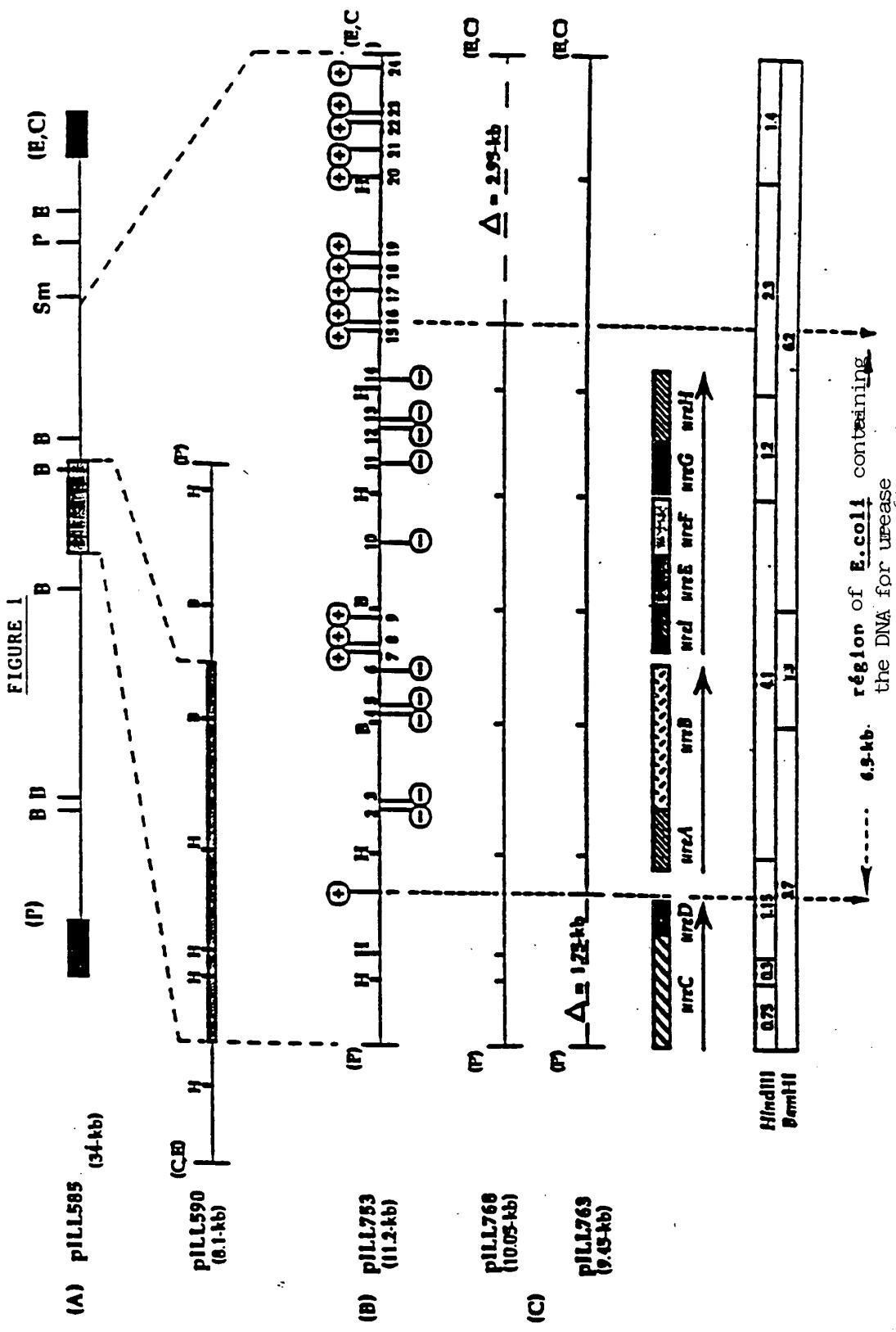
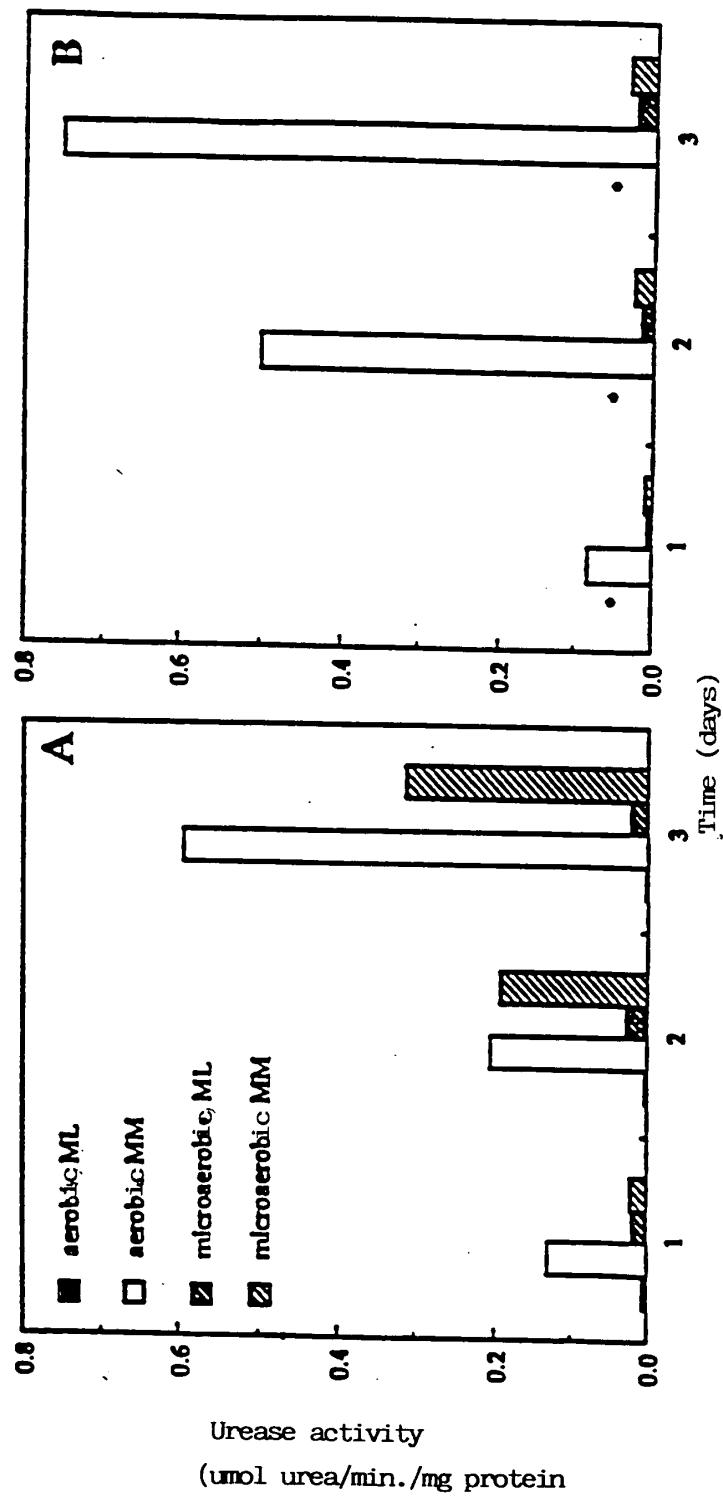
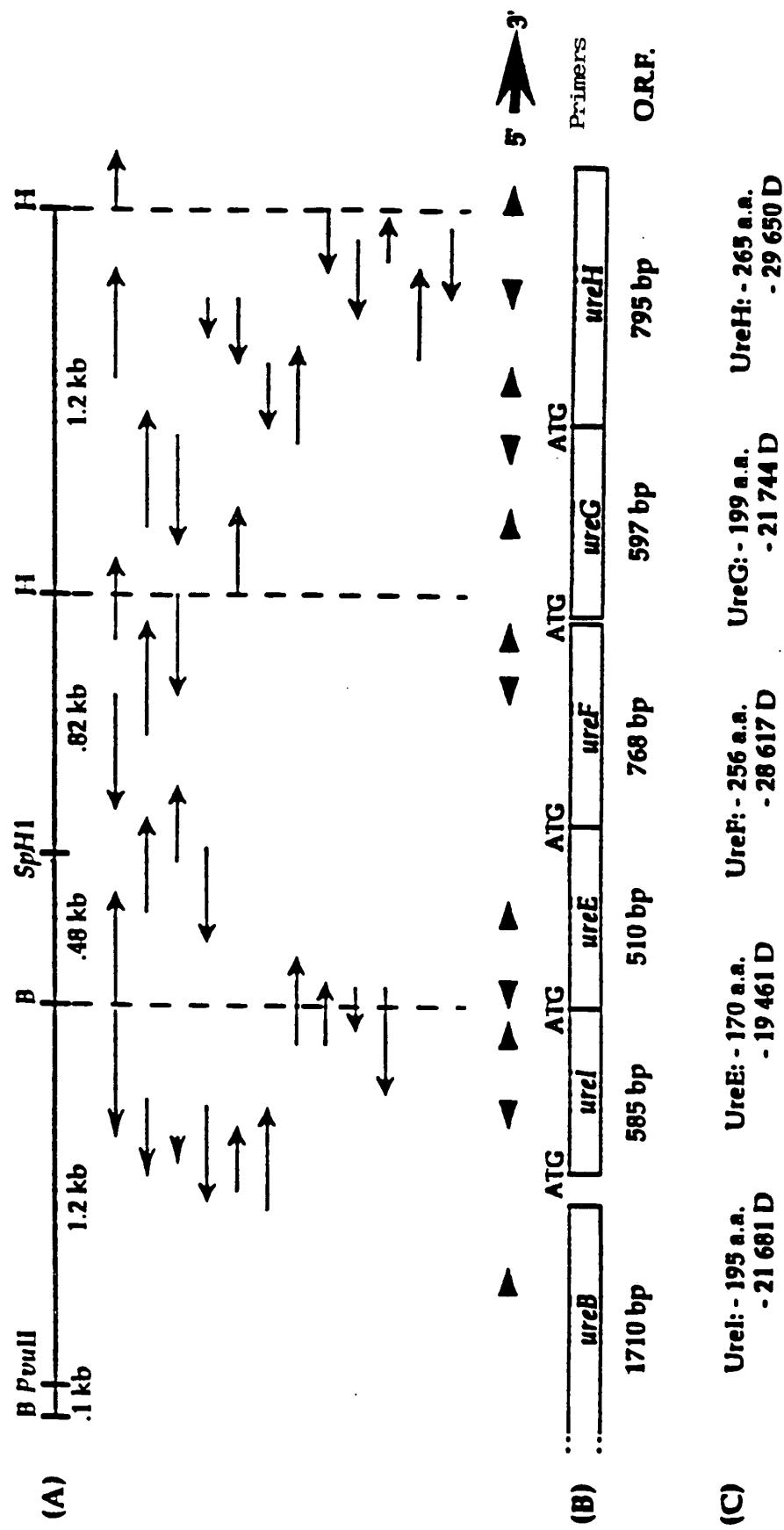


FIGURE 2





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FIGURE 4

1 A CTC TTT AGC ATT TTC TAG GA TTT TTT AGG AGC AAC GCT CTT AGA TCC TTA GTT TTT TTT AGC
--leu phe ser ile phe ~~ala~~

61 TCT CTG ATT TTT TGT TTA TCA ~~AAA~~ ATT TGG GGG CTT TTT TRG TTA TTT TTT GTC ATT

121 TTA CTA TTT TTC TTT ATG ATT AGC TCA AGC AAC AAA AGT TAT TCG TAA GGT GCG TTT GTT

181 GTG AAA ATT TTT GTT TGG ~~AGC~~ GAA ~~AGC~~ GCA ~~AGC~~ C'IA GGA C'IA GTC ATT GAT GGG
ur or

241 ATT GTT TTA ATC AGC ATT GGG ATT TCC GGG TTA ACC AAA GTC GAT CCT AAA AGC ACT GCG
ile val leu ile ser asn gly ile cys 91 y leu thr lys val asp pro lys ser thr ala

301 GTG ATT AAC TTT TTT GTG GGT GGG C'IC TCC ATT ATT ATT TGT ATT GTG GTR GTC ATC ACT TAT
val met asn phe phe val gly 91 y leu nor 110 110 cys 111 111 val val 110 thr tyr

361 TCC GCT CTC AAC CCT AGA GCC CCT GAA GGT GCT GAA GAT ATT GCT CAA GTC TCA CAC
ser ala 111 asn pro thr ala pro val 91 y ala glu asp ile ala gln val ser his

421 CAT TTG ACT ATT TTC ATT GGG CCA GCG ACT GGG TTA TTG TTT GGT TTC ACC TAC TGT TAT
his leu thr asn phe tyr 91 y pro ala thr 91 y leu phe 91 y phe thr tyr leu tyr

31

151

211 Met leu gly leu val 110 leu tyr val 91 y

271

331

391

451

FIGURE 4 (cont.)

481 GCG GCT ATC AAC CAC ACT TTT GGT TGC GAT TGG AGG CCC TAC TGT TGG TAT AGC TTA TTC
 ala ala ile asn his thr phe g1y leu asp trp arg pro tyr ser trp tyr ser leu phe
 541 GTC GCG ATC AAC AGG ATT CCT GCT GCG ATT TTA TCC CAC TAT AGC GAT ATG CTT GAT GAC
 val ala ile asn thr ile pro ala ala ile leu ser his tyr ser asp met leu asp asp
 601 CAC AAA GTG TTA GGC ATC ACT GAA GGC GAT TGG TGG GCG ATC ATT TGG TRG GCT TGG GGT
 his lys val leu g1y ile thr g1u g1y asp trp trp ala ile trp ala trp g1y
 661 GTR TGG CTT ACC GCT TTC ATT GAA AAC ATC TGG AAA ATC CCT TTA GGG AAA TTC ACT
 val leu trp leu thr ala phe ile glu asn ile leu lys ile pro leu gly lys ile trp g1y
 721 CCA TGG CTT GCT ATC ATT GAG GGC ATT TTA ATC GCT TGG ATT CCT GCT GTC TGA CRC TTT
pro trp leu ala ile ile glu g1y ile leu thr ala trp ile pro ala trp leu leu phe
 781 ATC CAA CAC TGG GTG TGA GAT GAT CAT
ile gln his trp val OPA
 782 TCC AAC ACT GGG TGT GAG ATG ATC ATT GAG CGT TTA ATA GGC ATT CTA AGG GAT TTA ANC
ure Met ile ile glu arg leu ile gly asn leu arg asp leu asn

FIGURE 4 (cont..)

842 871
 CCC TTG GAT TTC ACC GTC GAT TAT GTC GAT TAT GTC GAT TAT GTC GAT TAT GTC
 pro leu asp phe ser val asp tyr val asp leu glu trp phe glu thr arg lys lys il e

 902 932
 GCT CCC TTT AAA ACC AGG CAA GGC AAA GAC ATA GGC GTA CGC CTT AAA GAC GCT CCC AAG
 ala arg phe lys thr arg gln gly lys asp il e ala val arg leu lys asp ala pro lys

 962 992
 TTG GGT TTC TCT CAA GGA GAT ATT TTA TTT AAA GAA GAG GAA ATT ATC GCC GTT ATT
 leu gly phe ser gln gly asp il e leu phe lys glu glu lys glu il e ala val asn

 1022 1052
 ATC TRG GAT TCT GAA GTC ATT CAC ATC CAA GCT AAG AGC GTC GCA GAA GTA GCG AAA ATA
 il e leu asp ser glu val val il e his il e gln ala lys ser val ala glu val ala lys il e

 1082 1112
 TGC TAT GAA ATA GAA AAC CGC CAA GCG GCG GCG TAT GGC GAG TCT CAA TTT GAA TTT
 cys tyr glu il e gly asn arg his ala ala leu tyr tyr gly glu ser gln phe glu phe

 1142 1172
 AAA ACA CCA TTT GAA AAG CCC ACG CTA GCG TTA CTA GAA AAG CTA GGG GTT CAA ATT CGT
 lys thr pro phe glu lys pro thr leu ala leu glu lys leu gly val gln asn arg

 1202 1232
 GTT TRA AGT TCA AAA TTG GAT TCC AAA GAA CGC TTA ACC GTG AGC ATG CCC CAT AGT GAG
 val leu ser ser lys leu asp ser lys glu arg leu thr val ser met pro his ser glu

FIGURE 4 (cont.)

1262 CCT ATT TTT AGG GTC TCA CTG GCG AGC GAT TTT AAA GTC GTC ATG AAA TAG
 pro asn phe lys val ser asp asp phe lys val met lys AMB AA
 1292 SD
 1321 CAA ATG GAT AAA GGA AAA AGC GTG AAA AGC ATT GAA AAA AGC GTC GGT ATG CTC CCA AAA
 Met asp lys gly lys ser val lys ser ile gln lys ser val gln met leu pro lys
 1351
 1381 ACT CCA AGG ACA GAC AGC AAT GCT CAT GTC GAT AAT GAA TTT CTG ATT CTG CAA GTC AAT
 thr pro lys thr asp ser asn ala his val asp asn glu phe leu ile leu gln val asn leu
 1411
 1441 GAT GCG GTG TTC CCC ATT GGA TCT TAC ACG CAT TCT TTT GGG CTR TGT GCT AGA AAC TTA
 asp ala val phe pro ile gly ser tyr thr his ser phe gln leu leu ala arg asn leu
 1471
 1501 CAT CCA GCA AAA AGG GTT ACT AAT AAA GAA GCT TTA AAA TAT TTA AAA GCC AAT CTC
 his pro ala lys lys val thr asn lys gln ser ala leu lys ala asn leu
 1531
 1561 TCT AGC CAG TTC CTT TAC ACG GAA ATG CTG AGC TGT AAA CTC ACC TAT GAA AGC GCT CTC
 ser ser gln phe leu tyr thr gln met leu ser leu lys leu thr tyr glu ser ala leu
 1591
 1621 CAA CAA GAT TTA AAA AGG ATC TTA GGG GTT GAA GAA ATC ATT ACG CTA TCC ACA AGC CCC
 gln gln asp leu lys arg ile leu gln val gln ile leu thr leu ser thr ser pro

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FIGURE 4 (cont'd.)

1681	ATG GAA TTG CGA TTA GCC AAT CAA AAG CTA GGC AAA CGT TTC ATT AAA ACC TTA CAA GCC met glu leu arg leu ala aasn glu lys leu gly aasn arg phe ile lys thr leu glu aasn ala	1711	
1741	ATG AAC GAA TTA GAC ATT GGC GCA TTT AAC GCT TAC GCT CAA CAA ACC GAA GAC CCC met aasn glu leu asp ile gly ala phe aasn ala tyr ala gln gln thr glu asp pro	1771	
1801	ACC CAT GCC ACT AGC TAT <u>GGC GTR TTR GCG CCC</u> AGT TTG GGG ATT GAA TTG AAA ANG GCT thr his ala thr ser tyr gly val phe ala ala ser leu gly ile glu leu lys lys ala	1831	
1861	TTA AGG CAT TAT CTT TAT GCA CAA AAC ATG GTA ATT AAC TGC GTR AAA AGC GTC leu arg his tyr leu tyr ala gln thr ser aasn met val ile aasn cys val lys ser val	1891	
1921	CCA CTA TCT CAA AAC GAT GGG CAA AAA A'IC T'RA T'RG AAC T'RG CAA AGC CCA T'RT AAC CAG pro leu ser gln aasn asp gly glu lys ile leu ser leu gln ser pro phe aasn gln aasn	1951	
1981	CTC ATA GAA AAA ACC CTA GAA CAC GAC GAA AGC CAC TGC TGC GCG GCA AGC GTT CAA AAC leu ile glu lys thr leu glu leu asp glu ser his leu cys ala ala ser val gln aasn	2011	
2041	GAC ATT AAC GGG ATG CAG CAT GAG ACT TTA TAC TCG CCC CTT TAT ATG TCT TGA ATT TTA asp ile lys ala met gln his glu ser leu tyr ser arg leu tyr met ser OPA	2071	

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FIGURE 4 (cont..)

2102	SD	2132
TCT CAA ATT <u>GAA</u> AGG <u>AAT</u> TTT A'RG GTC <u>AAA</u> A'TT GGA GGT CCT GTC GAA GGA AGC GGT	Met val Iys ille gyl val cys gyl pro val gyl ser gyl	
<u>ureG</u>		
2162	2192	
AAA ACC GCC TTG ATT GAA GCT TTA ACG CGC CAC ATG TCA AAA GAT TAT GAC ATG GCG GTC	lys thr ala leu ille glu ala leu thr arg his met ser lys asp tyr asp met ala val	
lys	lys	
2222	2252	
ATC ACT AAT CAT ATT TAC ACG AAA GAC GCA GAA TTT ATG TGT AAA ATT TCG GTG ATG		
11e thr asn asp ille tyr thr lys glu asp ala glu phe met cys lys asn ser val met		
2282	2312	
CCA CGA GAG AGG ATC ATT GCC GTC GAA ACA GGA GGC TGT CCG CAC ACG GCT ATT AGA GAA		
pro arg glu arg ille ille gyl val glu thr gyl gyl cys pro his thr ala ille arg glu		
2342	2372	
GAC GCT TCT ATG AAT TTA GAA GCC GTC GAA ATG CAT GGC CGT TTC CCR AAT TTG GAA		
asp ala ser met asn leu glu ala val glu met his gyl arg phe pro asn leu glu		
2402	2432	
TTG CTT TTG ATT GAA AGC GGA AGT AAC CTT TCA GCG ACT TTC AAC CCA GAG CTA GCG		
leu leu ille glu ser gyl gyl ser asn leu ser ala thr phe asn pro glu leu ala		
2462	2492	
GAC TTT ACG ATC TTT GTG ATT GAT GTG GCT GAG GGC GAT AAA ATC CCC AGA AAA GGC GGG		
asp phe thr ille phe val ille asp val ala glu gyl asp lys ille pro arg lys gyl gyl		

Figure 4 (cont. v.)

2522	CCA ATC ACG CGT TCA GAC TTG CTC GTC AAT AAG ATT GAT TTA GCC CCC TAT GTC	2552																		
pro	gly	ile	thr	arg	ser	asp	leu	leu	val	ile	asn	lys	ile	asp	leu	ala	ala	pro	tyr	val
2582	GGA GCC GAC TTG <u>AAA</u> GTC ATG GAA <u>AGG</u> GAT TCT <u>AAA</u> <u>AAA</u> ATC GCG GCG <u>AAA</u> AGC CCT TTA	2612																		
gly	ala	asp	leu	lys	val	met	glu	arg	asp	ser	lys	lys	ile	ala	ala	lys	ser	pro	leu	
2642	TTT TTA CCG AAT ATC CGC GCT <u>AAA</u> GAA GGR TTA GAC GAT GTG ATC GCT TGG ATC <u>AAG</u> CGC	2672																		
phe	leu	leu	pro	asn	ile	arg	ala	lys	glu	g1y	leu	asp	asp	val	ile	ala	trp	ile	lys	arg
2702	AAC GCT TTA TTG GAA GAT TGA TGA <u>ACA</u> CTT																			
asn	ala	leu	leu	glu	asp	OPA														
2701	<u>SD</u> CAA CGC TTR ATT <u>GGA AGA</u> TTG ATG AAC ATC GCT CAA GAA TCC <u>AAG</u> CTC AGG TTA <u>AAA</u> <u>ureH</u>	2731																		
thr	lys	ile	g1y	ala	asp	gly	arg	cys	val	ile	glu	asp	asn	phe	thr	pro	pro	phe		
2761	ACC AAA ATA GGG GCT GAC GGG CCC TGC GTG ATT GAA GAC AAT TTT TTC ACG CCC CCC TTT	2791																		
thr	lys	ile	g1y	ala	asp	gly	arg	cys	val	ile	glu	asp	asn	phe	thr	pro	pro	phe		
2821	AAG CTC ATG CGG CCC TTT TAC CCT <u>AAA</u> GAC GAT TTA GCG GAA ATC ATG CTT TTA GCC GTA																			
lys	leu	met	ala	pro	phe	tyr	pro	lys	asp	asp	leu	ala	glu	ile	met	leu	ala	ala	val	

Figure 4 (cont.)

2881	AGC	CCT	GGC	TTA	ATG	AAA	GGC	GAT	GCA	CAA	GTG	ATC	AAC	ATC	GGT	CCA	ATC	TGC	
ser	pro	gly	leu	met	lys	gly	asp	ala	gln	asp	val	gln	leu	asn	ile	gly	pro	asn	cys

2941	2971
AAG TTA AGG ATC ACT TCG CAA TCC TTT GAA ATC CAT AAC GAA GAC GGG TRT GCT	AAC GAA GAC GGG TRT GCT
lys leu arg ile thr ser gln ser phe glu lys ile his asn thr glu asp gly phe ala	

3001 AGC AGA GAC ATG CAT ATC GTC GGG GAA AAC GCT TTT GAC TTC CCC CCG
ser arg asp met his ile val val gly gju asn ala phe leu asp phe ala pro phe pro
3031

3061 TTA ATC CCC TTT GAA AAC GCG CAT TTT AAG GGC AAT ACC ACG ATT TCT TTG CGC TCT AGC
3091 leu ile pro phe glu asn ala his phe lys gly asn thr thr ile ser leu arg ser ser

3121 TCC CAA TGT C'TC TAT AGT GAA ATC AT'G GTC GCA GGG CGA G'G GCG CGC ATG GAG TGG TTT
3151 ser glu leu tyr ser glu ile val ala gly arg val ala arg asn glu leu phe

3181	AAA	TTC	AAC	CGC	TTG	CAC	ACC	AAA	TCT	ATC	TTA	CAA	GAT	GAG	AAA	CCC	ATC	TAT	TAT	
	lys	phe	arg	arg	leu	lys	thr	lys				ile	leu	glu	asp	lys	pro	ile	tyr	tyr

3241 GAC AAC ACG ATT TTA GAT CCC AAA ACC AGC TTA ATT AAC ATG TGC ATT GAT GGC
asp asn thr ile leu asp pro lys thr thr asp leu asn asn met cys met phe asp gly

FIGURE 4 (cont.)

3301 TAT ACG CAT TAT TTG AAT TTG GTG CTG GTG ATC AAT TGC CCC ATA GAG CTC TCT GGC GTG CGA
tyr thr his tyr leu asn leu val leu val asn cys pro ile glu leu ser gly val arg

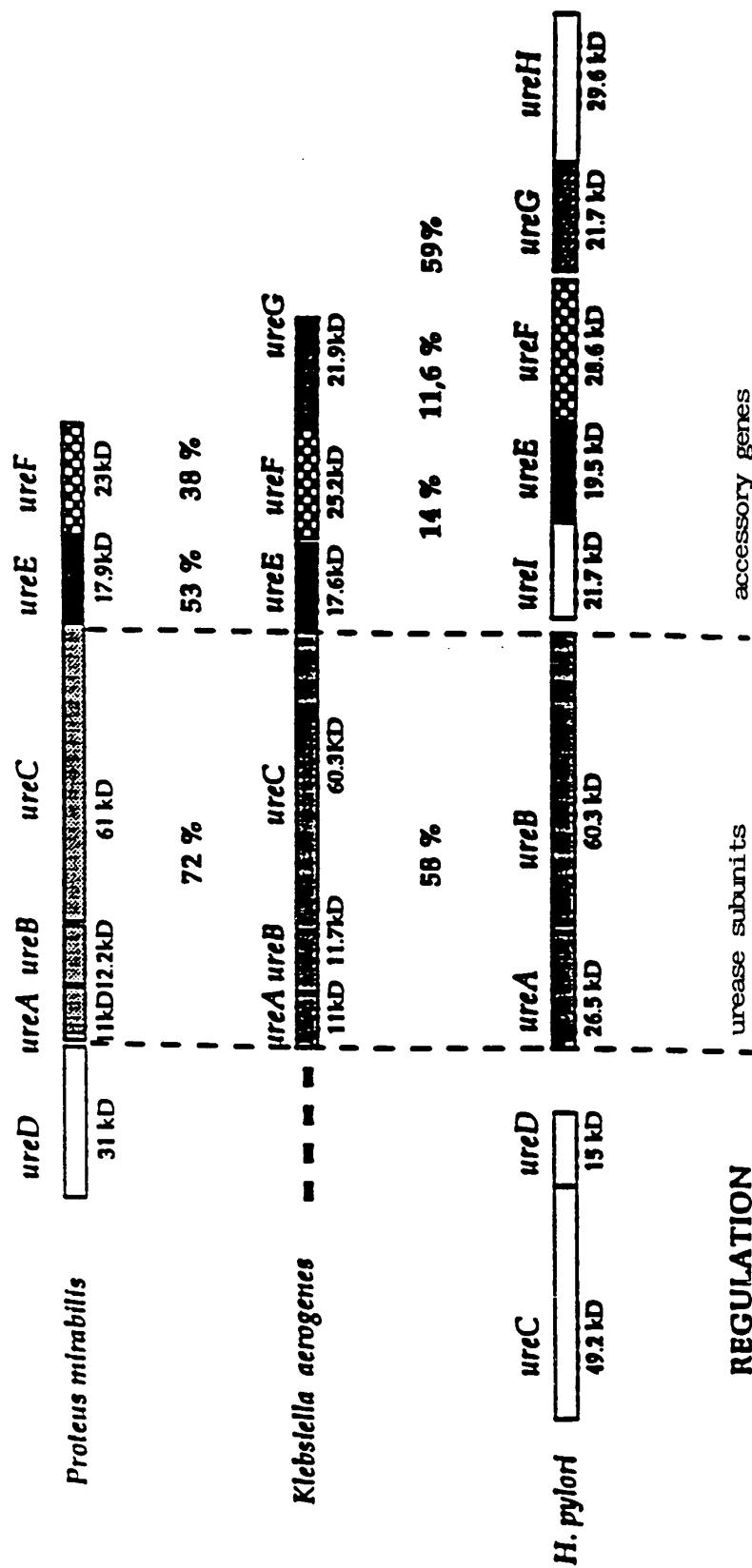
3361 GGA TTG ATT GAA GAG AGC GAA GCA GTG GAT GGA GCC GTG AGT GAA ATC GCT AGT TCT CAT
gly leu ile glu glu ser glu gly val asp gly ala val ser glu ile ala ser ser his

3391 3331 GGA TTG ATT GAA GAG AGC GAA GCA GTG GAT GGA GCC GTG AGT GAA ATC GCT AGT TCT CAT
gly leu ile glu glu ser glu gly ser glu pro ile val ser glu ile ala ser ser his

3421 3451 TTA TGC CTG AAA GCT TTA GCG AAA GGC TCA GAA CCC TTG TTG CAT TTA AGA GAA AAA ATC
leu cys leu leu ala ala lys gly ser glu pro ile leu his leu arg glu lys ile

3481 3511 3441 GCT CGC TTT ATC ACG CAA ACG ATT ACG CCA AAG GTT TAA AAA ACA CTT TAA AAA AGA TTA
ala arg phe ile thr gln thr ile thr pro lys val och

3541 TAC CCT TTA GTC TTT TTT AA

FIGURE 5

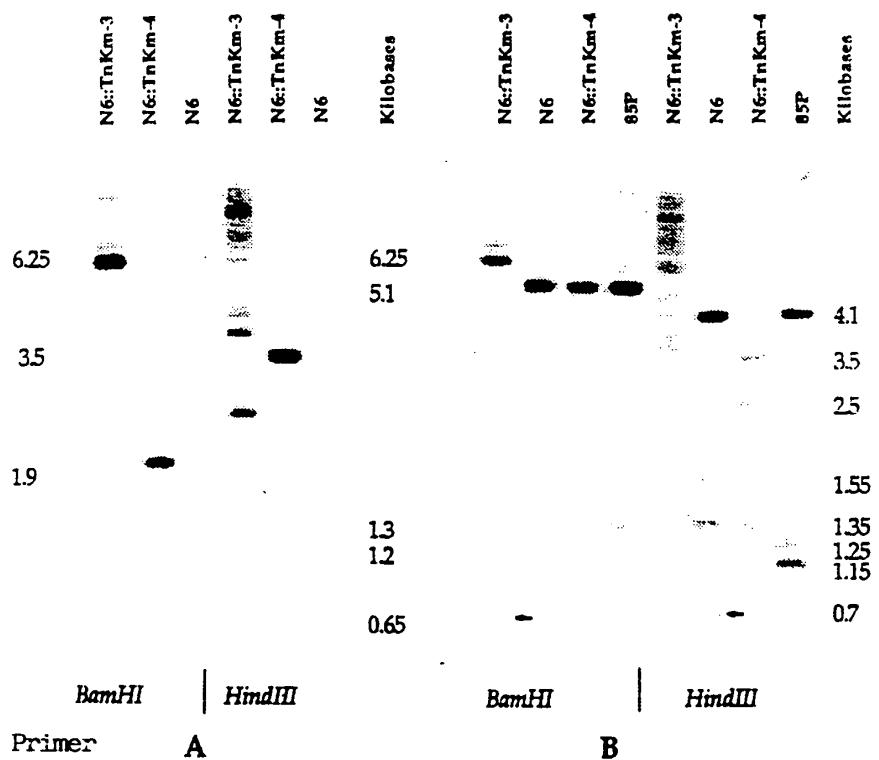


FIG. 6

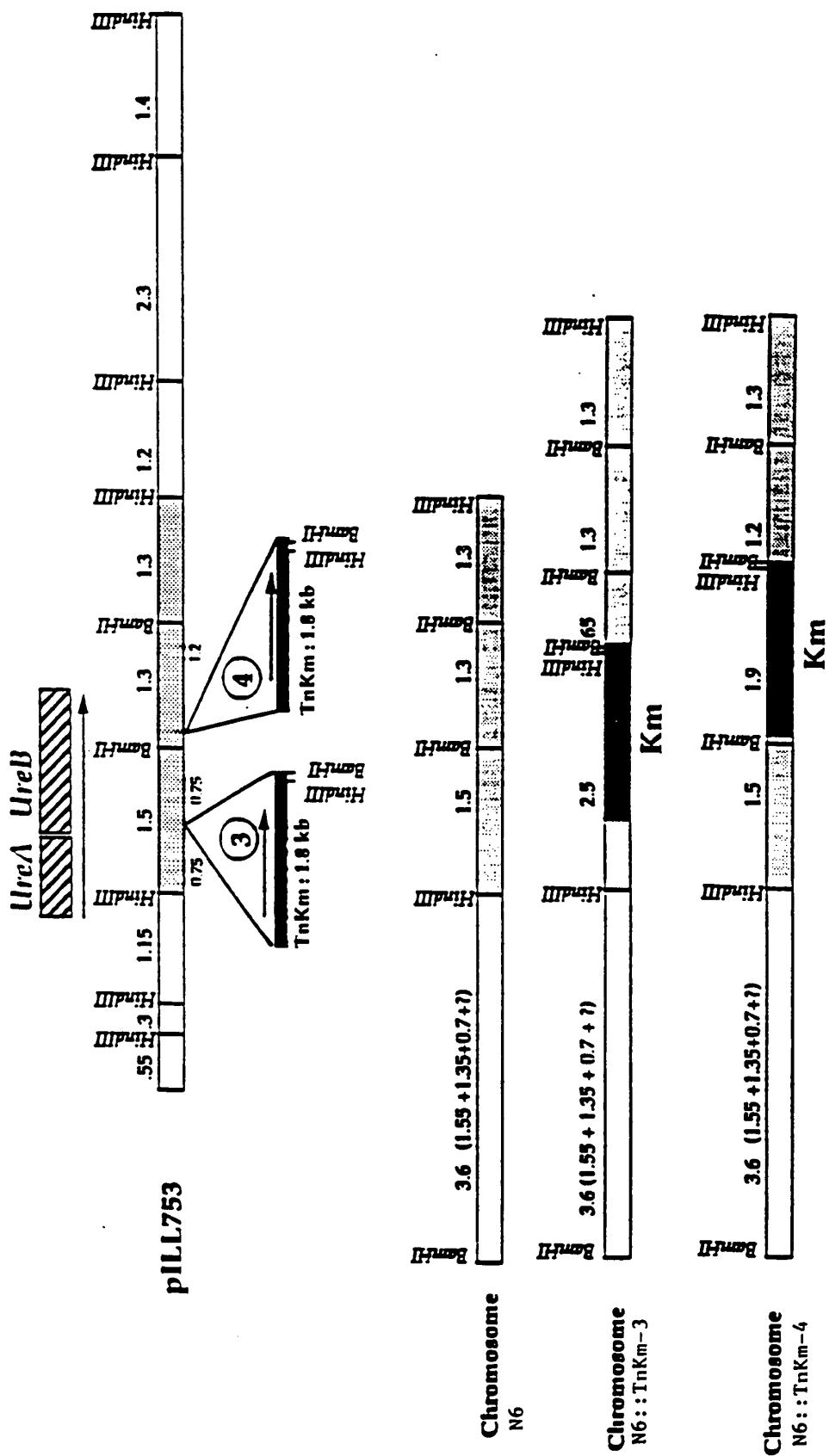


FIGURE 7

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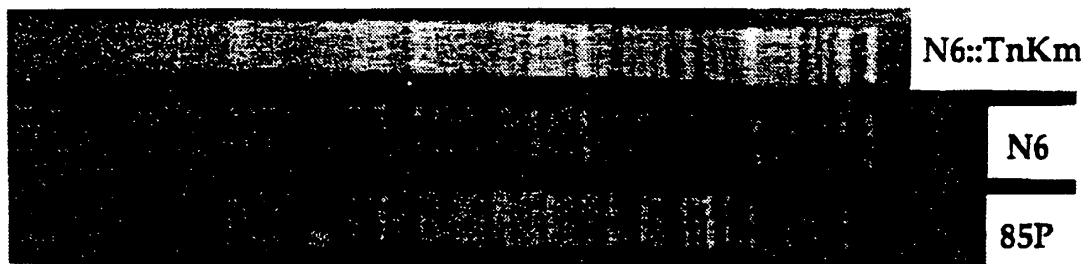


FIGURE 8

FIGURE 9

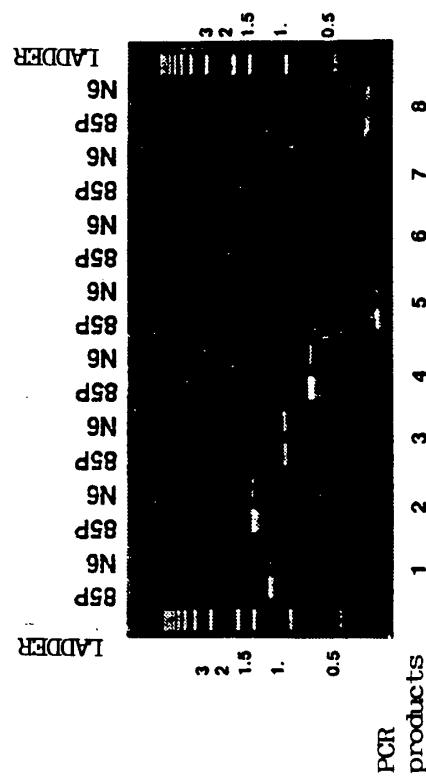
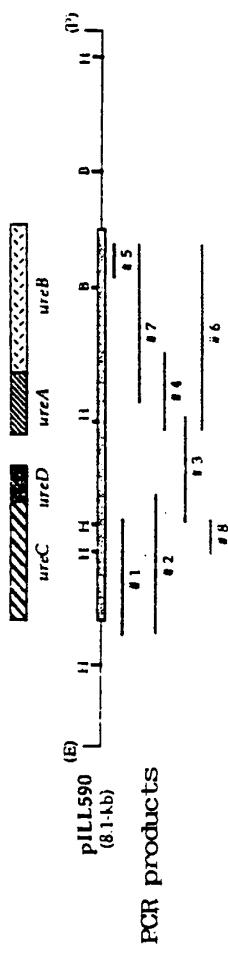


FIGURE 10



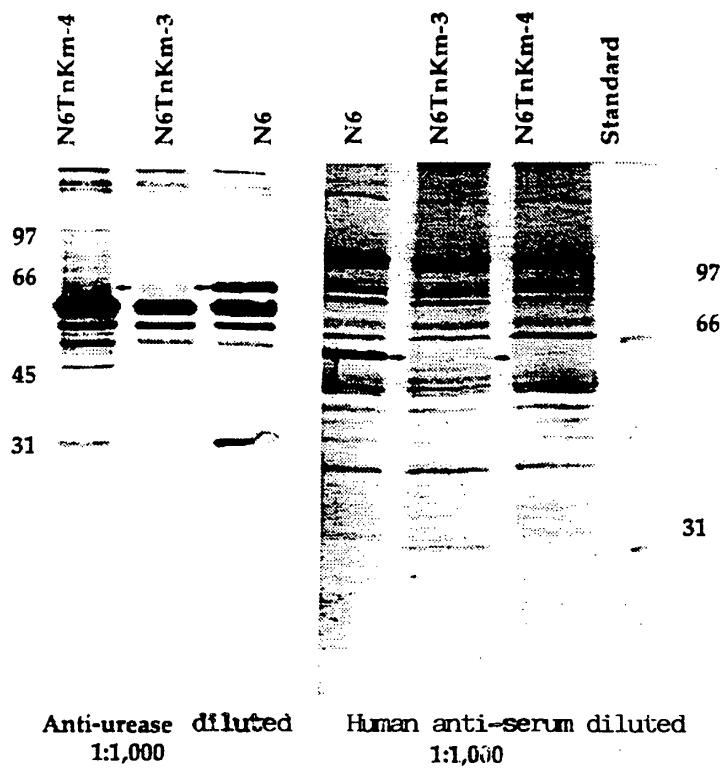


FIGURE 11

FIGURE 12

